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THE CITY HOME GARDEN

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FRESH VEGETABLES for an average family may be grown upon a large back yard or city lot.

The use of fresh vegetables conserves meats, grains, and other foods produced on farms.

The production of vegetables at home relieves transportation difficulties and solves the marketing problem.

The city home garden utilizes idle land and spare time for food production.

Thousands of acres of idle land that may be used for gardens are still available within the boundaries of our large cities.

Some of the problems that confront the city gardener are more difficult than those connected with the farm garden, and it is the object of this bulletin to discuss these problems from a practical standpoint.

THE CITY HOME GARDEN.

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THE PROBLEMS that confront the city gardener are vastly greater than those of the farmer, who is free to select the choicest plat of ground upon the farm for his vegetable garden. The city-lot or back-yard garden as a rule offers little choice of soil or location. The available land is often shaded a part of the day, and the soil frequently consists of hard clay or is covered to a depth of several inches with cinders, broken stone, or other materials unfit for growing plants. The city gardener is usually handicapped by lack of practical experience and for want of suitable tools with which to do the work. Hand methods must be employed for the most part, and numerous local difficulties must be overcome. It is possible, however, to grow certain kinds of vegetables under very adverse conditions, and the results obtained by many city gardeners are truly remarkable.

The many thousands of city gardens have played an important part in providing a substantial increase in the food supply of the

country. It is essential that the work so well started should continue and that the many thousands of acres of unoccupied land in and around our cities be utilized for food production. The experimental stage of city gardening has been passed, and, in the language of one of the State workers, "the city garden movement will not have achieved its full purpose until all suitable lands are utilized and every family table is fully supplied."

The city back-yard or vacant-lot garden provides a supply of vegetables at home without transportation or handling costs. Vegetables from the home garden are fresher and more palatable than



FIG. 1.—Small back-yard gardens in a residence section of Washington, D. C.

those brought from a distance. Many persons who work in offices, stores, and factories have time mornings and evenings that may well be devoted to the cultivation of a garden, thus utilizing spare time and idle land for food production. The home vegetable garden should be a family interest and all members of the family who are able to do so should take part in its cultivation. There is no better form of outdoor exercise than moderate working in the home garden, and few lines of recreational work will give greater returns for the time employed. (Fig. 1.)

TYPE AND LOCATION OF THE CITY GARDEN.

There are three general types of city vegetable gardens: Back-yard gardens, vacant-lot gardens, and community gardens. In locating the home garden the back yard or the grounds surrounding the dwelling should be given first consideration, because of the

convenience both in working the garden and in gathering the products as wanted for use. If the grounds around the dwelling are too small or too densely shaded or if the soil is of such a character that vegetables can not be grown successfully upon it, the use of a vacant lot in the neighborhood is recommended. (Fig. 2.) Community gardens located in the outskirts of the city, where a tract of land can be secured, are adapted for the use of families living in apartment houses; also for shopworkers and those employed by large manufacturing concerns. There is a distinct advantage in having the garden located near the home, as much of the work of tending it

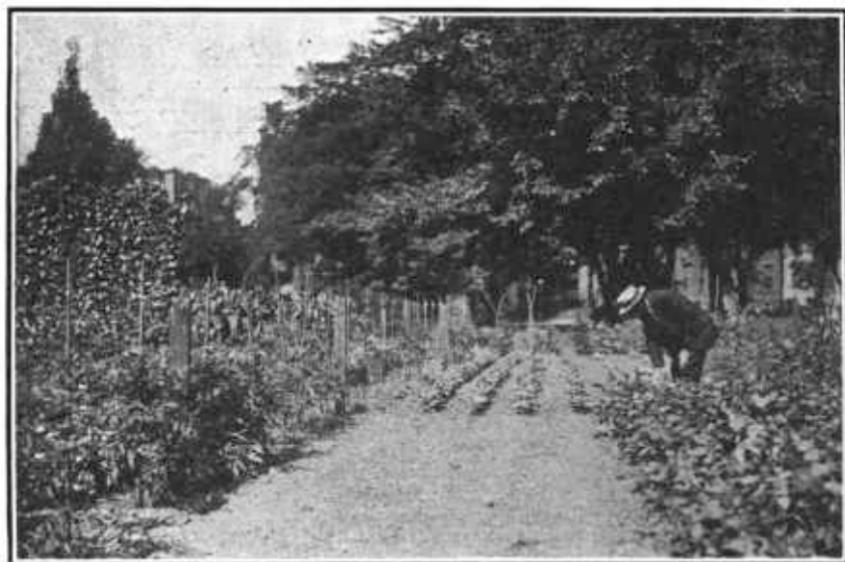


FIG. 2.—A vacant-lot garden on one of the principal residence streets of Washington, D. C.

may be done during spare moments, and the garden can be protected from theft or from injury by stray animals.

Do not locate the garden on land upon which the sun does not shine for at least five hours each bright day. Do not locate the garden on soil where the rock is but a few inches below the surface and where there is insufficient moisture. Do not attempt to grow a garden where a fill has been made with cinders, broken bricks, or rock, or where the original soil has been buried with materials upon which weeds will not grow. If weeds grow rank and vigorous it is a sure sign that the soil is good. Do not plant a garden under or near large trees that will steal all the moisture and plant food from the crops. The maples and the oaks are the kinds of trees that are most injurious to crops planted near them. Do not plant a garden on low land where the crops are reasonably

sure to be lost from overflow. Failure to observe one or more of the above precautions has resulted in disappointment on the part of many gardeners.

Where there is any choice in the selection of a garden location the following points should be considered. The land should be level



FIG. 3.—Long straight rows of vegetables which add attractiveness to a garden and lessen the labor of cultivation. Note how this garden has produced these results.

er gently sloping toward the south or southeast. The drainage should be good, but the land should not be so steep as to wash during rains. The location should be higher than adjoining land, in order to safeguard against frost, as frost does most damage on the lower levels. The ideal soil is a dark sandy loam with a rather retentive subsoil. The soil should be deep and break up loose and

mellow when plowed or spaded. Plenty of organic matter or rotted manure should be present in the soil, in order to give it the power to retain large quantities of moisture and to carry the crops through periods of drought.

The ideal garden spot is seldom found, but it is often possible to choose a location that embodies a number of the more important conditions and then supply others. The difficulties of the first season are greater than those of subsequent years, and a garden plat if properly handled will improve with each season's cultivation.

On account of the wide variety of local conditions that must be met, no definite plan can be given for a garden. A plan should be drawn on paper and the location of each crop decided upon. As a general rule, the rows should run north and south, but it is more important to have the rows run the long way of the garden for convenience in cultivating. Figure 3 shows a well-planned garden.

It is essential that the garden be so arranged that the tall-growing crops will not shade the smaller ones.

PREPARATION OF THE SOIL.

With the location of the garden settled, the first step is the preparation of the soil. First, remove anything that would interfere with the plowing or spading of the soil. If the location is the home back yard it is assumed that the ground is free from débris and ready to be broken up. If the garden is to be located on a vacant lot it is probable that there will be stones, broken bricks, tin cans, and other trash to be gotten rid of. If the quantity of trash is not too great it should be hauled to some dump, but if there is so much of it as to make its removal expensive it may be piled on one side or one end of the lot. In some cases stone fences have been built along the outside of lots from the stones that were scattered over the ground. This cleaning-up process requires considerable work and should be done whenever the weather will permit prior to preparation for planting.

The next step in the garden-making process will be to plow or spade the ground. If the land is in sod it should be turned in the fall so that the sods will rot. Heavy clay soils should be turned up loosely and allowed to lie exposed to the freezing and thawing of the winter months. In all cases manure should be turned under if it can be secured. If the surface soil is so hard that it can not be spaded or plowed to advantage a pick or mattock should be used and the ground broken to a depth of 8 or 10 inches. Plenty of manure is about the only thing that will bring a soil of this character into condition. The supply of manure in cities is now quite limited, and the city gardener should make arrangements early in the season to

get what he needs. It is assumed that the average back-yard garden is about 30 by 60 feet in size. About 1 ton or one 2-horse load of stable manure can be spaded into the soil of a plat of this size each year. On soil which has not been worked before and which is especially heavy and wanting in organic matter a larger quantity of manure can be used. Street sweepings are not desirable, as they frequently contain considerable oil. Sawdust and planing-mill shavings should not be used on garden land. Leaves may be mixed with heavy soils, but it is best to have them fairly well rotted before they are applied to the land. Early breaking and exposure to frost is the best method of getting land that has not been under cultivation for a number of years in shape for planting. Sandy soils do not benefit by freezing and thawing as do the heavy clay soils, and in all cases precautions must be taken so that the soil will not wash away during heavy rains. It is a very good plan to plow or spade the land in the autumn, sow rye upon it, and then turn the rye under early in the spring.

In regions where the soil is very sandy it is often necessary to keep the surface covered with coarse manure or with some material to prevent it from blowing away. If this precaution is not taken the entire surface soil will be blown off to the depth of the plowing. In the spring the coarser part of the covering should be raked off or turned under before pulverizing and fitting the surface for planting.

Nothing is gained by working the land before it is sufficiently dry in the spring. In sections where the ground freezes hard during winter no harm will be done by plowing it in the fall or during the early winter when quite wet, as the freezing will correct any injury, but land that is worked when too wet in the spring will be injured for the entire season. The usual test is to press a small quantity of the soil in the palm of the hand. If it is too wet for working it will adhere in a solid mass and retain the imprint of the hand, but if dry enough to work it will crumble apart of itself.

When the test shows its fitness for working, land which was plowed or spaded in the fall should be thoroughly harrowed, raked, hoed, or forked over to a depth of 4 or 5 inches, in order to fit it for planting. The more carefully this part of the work is done the easier it will be to care for the crops during the growing season. Land which was not worked in the fall should be plowed or spaded as soon as it dries out sufficiently in the spring, and the top should be thoroughly fitted, as suggested above.

USE OF ASHES ON GARDEN SOILS.

Gardeners frequently ask whether it is advisable to use coal and wood ashes on garden soils. The use of coal ashes on heavy clay soils will tend to lighten them, but the ashes should be screened be-

fore they are applied, in order to remove any clinkers or cinders. They should then be spread evenly upon the land and thoroughly mixed with it. Coal ashes have little value as a fertilizer, their use being mainly to loosen the soil and make it more workable.

Wood ashes that are produced by the burning of hard woods, such as oak and hickory, frequently contain as much as 7 per cent of potash and also a little lime and for this reason are a valuable fertilizer. Wood ashes produced by the burning of pine and other soft woods and hardwood ashes that have been exposed to the weather and have had their potash leached from them have comparatively little value as a fertilizer. Not more than 50 pounds of reasonably dry unleached hardwood ashes should be applied to a plat of ground 30 by 60 feet in size, and these should be well mixed with the soil.

LIMING GARDEN SOILS.

An application of about 12 pecks of hydrated or air-slaked lime to a plat of land 30 by 60 feet in size is advisable in most cases, but there are certain soils that do not need lime. Lime has the effect of loosening and pulverizing heavy clay soils. It also has the effect of sweetening poorly drained soils and those that have a tendency to be sour. It is poor policy, however, to endeavor to remedy conditions resulting from lack of drainage by the application of lime without first providing suitable drainage and removing the cause of the sourness of the soil. Lime should always be applied to the surface soil and not turned under. It should not be applied to land that is to be planted to Irish potatoes, on account of the tendency of the tubers to become infested with scab where lime is present. Perhaps the best method of applying lime to the remainder of the garden is to scatter it over the surface after plowing and before the land is harrowed and fitted for cultivation in the spring. (Fig. 4.) One application each year is sufficient, and much larger quantities may be applied on heavy clay soils than on light or sandy soils. Lime should never under any circumstances be mixed with commercial fertilizer or with manure, as it liberates the nitrogen contained in them.

USE OF MANURE ON GARDEN LAND.

The use of barnyard manure on garden land has already been mentioned, but too much stress can not be placed upon this important point. The most successful commercial gardeners not only follow the practice of plowing or spading under large quantities of manure, but they stack up manure to rot and apply the rotted manure as a top-dressing when fitting the land for planting. Beans, tomatoes, and Irish potatoes may be injured by the use of too much manure, but it is practically impossible to have the land too rich for most garden crops.

Poultry and pigeon manures are excellent fertilizers for the garden but must be used sparingly, as they are very strong and are liable to burn the crops. These manures should be kept under shelter until used and then should be well mixed with the soil, care being taken that no lumps of the manure come in direct contact with the seeds. Not more than 200 pounds of poultry or pigeon manure should be applied to a garden plat 30 by 60 feet in size.

Sheep manure is sold by florists and seedsmen and is an excellent fertilizer for garden crops. Like poultry manure, it is very strong

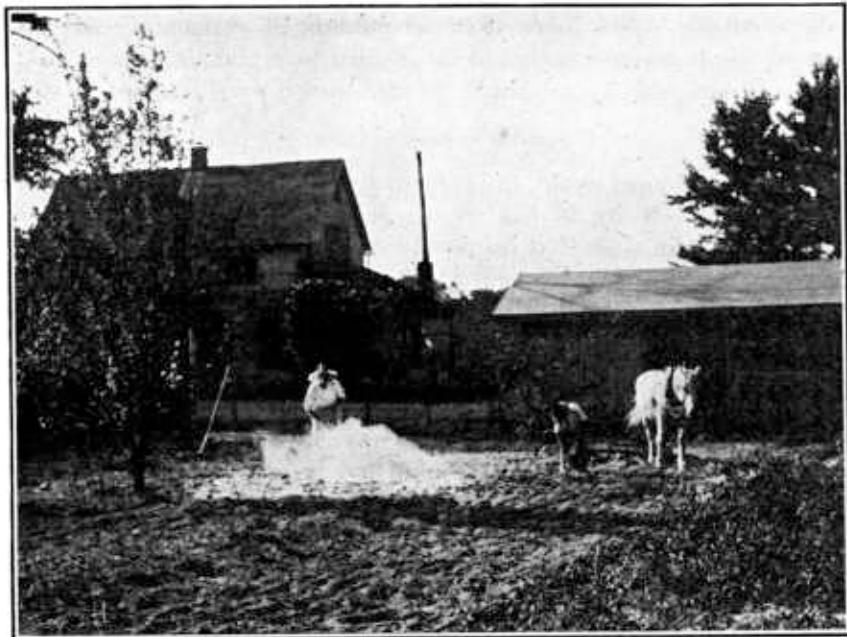


FIG. 4.—Applying lime to a garden after plowing and before harrowing.

and should be used sparingly. A little pulverized sheep manure sprinkled along the rows and worked into the soil will give the plants a vigorous growth.

COMMERCIAL FERTILIZERS.

The use of commercial fertilizers is advisable, especially where plenty of stable or barnyard manure can not be procured. As a rule, fertilizers should be sown broadcast and thoroughly harrowed or raked into the upper 3 inches of soil. Where applied underneath the rows the fertilizer should be well mixed with the soil before the seeds are planted. Great care must be taken in the use of commercial fertilizers in a small garden, as there is always a tendency to use too much and do more injury than good. From 40 to 60 pounds of a

standard fertilizer, such as is used by truck gardeners, may be applied to a plat of ground 30 by 60 feet in size.

Commercial fertilizers may be used in very moderate quantities as a side dressing for most growing crops. Nitrate of soda is frequently used in this manner, especially with crops that are grown for their leaf and stem development rather than for fruit. Where used as a side dressing it is best to apply the fertilizer a short distance from the plants but where the small feeder roots will reach it. The fertilizer should be worked into the soil immediately.

It should be remembered that the best results are obtained by the use of commercial fertilizers where there is plenty of manure or organic matter in the soil. All sods and weeds and the remains of garden plants that are not infected with disease should be turned under or composted in one corner of the garden, in order to form material with which to enrich the soil.

TOOLS.

Elaborate or expensive tools are not necessary for the cultivation of a small garden; in fact, a spade or spading fork, a hoe, a steel rake, and a line with two stakes to fasten it to are all that are required. A garden trowel and a watering can may be added to advantage but are not absolutely necessary. A wheelbarrow, wheel cultivator, and seed drill are desirable for the larger gardens and might be procured and used jointly by several gardeners in a neighborhood. After the soil is broken and in shape for planting, the hoe and the steel rake are the important tools for a small garden.

SEEDS.

A comparatively small quantity of seeds is required for planting the average city garden, but these should be procured in ample time and should be of the highest quality obtainable. The best are the cheapest in the long run. Garden seeds should not be wasted; only enough should be planted to insure a perfect stand. Any seeds that are left over should be stored in a ventilated tin or glass container, to protect them from mice until needed for later planting. The particular variety of any crop to plant will depend upon local conditions. There are usually experienced persons in each community who can be relied upon for advice as to the best varieties to plant in that section. A number of the seed houses are now offering special garden-seed collections adapted to various conditions and sizes of gardens.

STARTING EARLY PLANTS.

Half the pleasure and profit of a garden is derived from having something to use just as early in the spring as possible. In many

cities and towns last year the local greenhouse men grew thousands of plants which were sold to home gardeners at very reasonable prices. It often happens, however, that home gardeners do not have the opportunity to purchase well-grown plants, so they must start their own supply of early plants in the house or in a hotbed if they desire to have their crops mature early. Among the garden crops that may be started to advantage in this manner are tomatoes, early cabbage, peppers, eggplant, and lettuce. Even cucumbers, melons, beets, snap beans, Lima beans, and sweet corn may be started indoors by using flowerpots, paper bands, or berry boxes to hold the soil.

Where just a few tomato and cabbage plants are desired, the seeds may be sown in a cigar box or in a shallow tin pan with a few

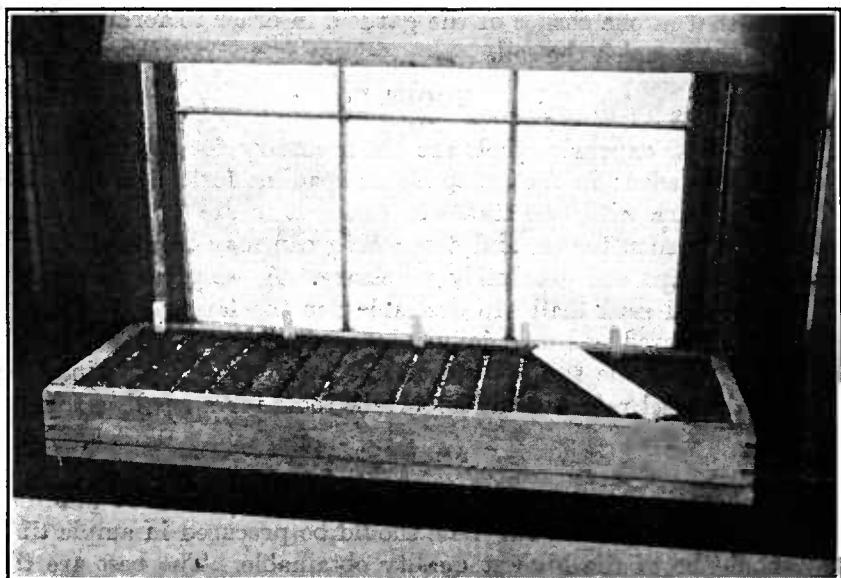


FIG. 5.—Window box for starting early plants in the house.

holes punched in the bottom for drainage. A very good plan is to secure a soap box and saw off about 3 inches of the bottom portion to form a tray. If the top has been saved, it can be nailed on and the box again sawed, forming a second tray. This will leave about 3 inches of the middle of the box upon which a piece of $\frac{1}{4}$ -inch wire netting may be tacked to form a sieve for screening the soil used in the trays. Any shallow box (fig. 5) that may be fitted into the window of a living room where there is a reasonable amount of sunlight will answer for starting early plants.

After filling the trays with sifted soil, smooth off even with the top and slightly firm down the soil in the trays by means of a small piece of board. Use the edge of a ruler or strip of thin board (fig. 6)

to form little grooves or furrows in the soil in which to plant the seeds. These little rows should be about 2 inches apart and one-fourth inch deep. Scatter the seeds of tomatoes, early cabbage, peppers, and eggplant, as shown in figure 7, very thinly in the rows and cover them by sifting a small quantity of soil over the entire surface. Smooth the top of the soil gently and water very lightly.

The box should then be placed where the temperature will remain at about 70° F. If conditions are kept right, the seedlings will appear in five to eight days after the seed is planted. From this time on the plants will need constant care, especially as regards watering. Owing to the fact that the light from a window comes from one side



FIG. 6.—Starting early plants; preparing the seed box.

only, the seedlings will draw toward the glass, and the box should be turned each day, so as to keep the plants from growing crooked. Just as soon as the little plants are large enough to handle they should be transplanted to other boxes and given 2 or 3 inches of space in each direction.

Where the required number of plants is too great for growing in window boxes, a hotbed or coldframe may be provided. The usual method of constructing a hotbed is to first dig a shallow pit 8 to 18 inches deep, according to locality, and pack it full of fermenting stable manure. The manure before being placed in the pit should be turned over once or twice in a pile, in order to insure even heating.

It may then be packed into the hotbed pit and tramped uniformly. Standard hotbed sash are 3 feet in width and 6 feet in length, and the size of the bed should be made to suit the number of sash employed. A framework of boards 18 to 24 inches high at the back and about 12 inches high in front is placed over the manure-filled pit to support the sash. (Fig. 8.)

About 3 or 4 inches of fine garden loam is spread evenly over the manure and the bed allowed to stand four or five days to warm up before any seed is sown. At first the temperature of the bed will run rather high, and it is best to delay planting the seeds in it until it begins to decline. This can best be determined by placing a cheap

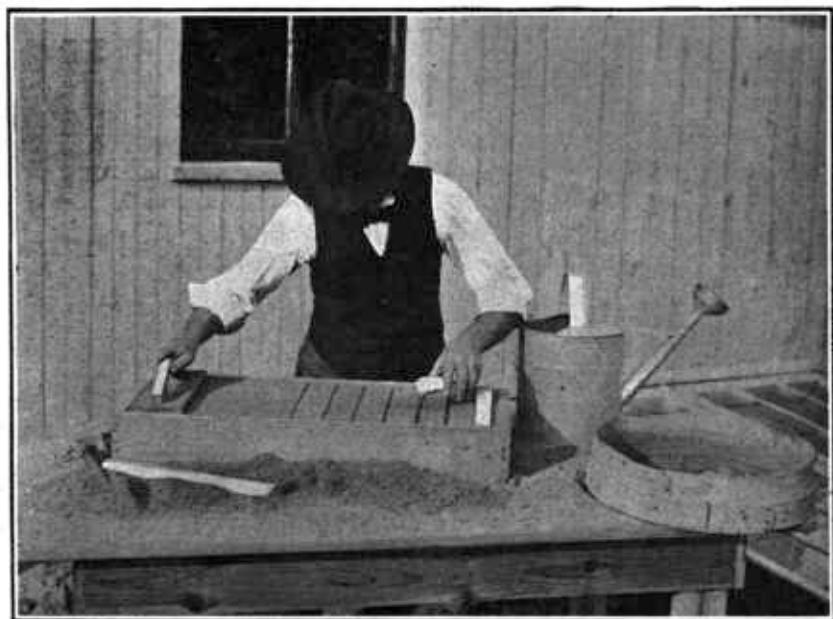


FIG. 7.—Starting early plants; sowing seed in the window box.

thermometer, with the bulb about 3 inches below the surface of the soil, and watching it until the temperature falls below 85° F. before planting the seeds.

If glazed sash are not available for covering the hotbed, heavy muslin may be used instead; the glass, however, makes the most desirable form of covering. Care must be taken to give the bed sufficient ventilation to prevent overheating, as it is liable to heat up rapidly when the sun shines full upon the glass. Watering should be done during the early part of the day and the bed given enough air so that the plants will dry off before night. The bed should be closed before evening, in order to conserve enough heat to carry it through

the night in good condition. If the weather should turn severely cold, a covering of straw, blankets, or canvas may be thrown over the bed to protect it.

A coldframe is constructed in exactly the same manner as a hotbed, with the exception that no manure is placed beneath it to supply heat.

Before the plants are set in the garden, either from the hotbed or the coldframe, they should be gradually hardened to outside conditions by giving them more ventilation each day. Finally, remove the sash entirely on bright days and replace them for the night. The aim should be to produce strong, healthy plants that will make a quick start when placed in the garden.

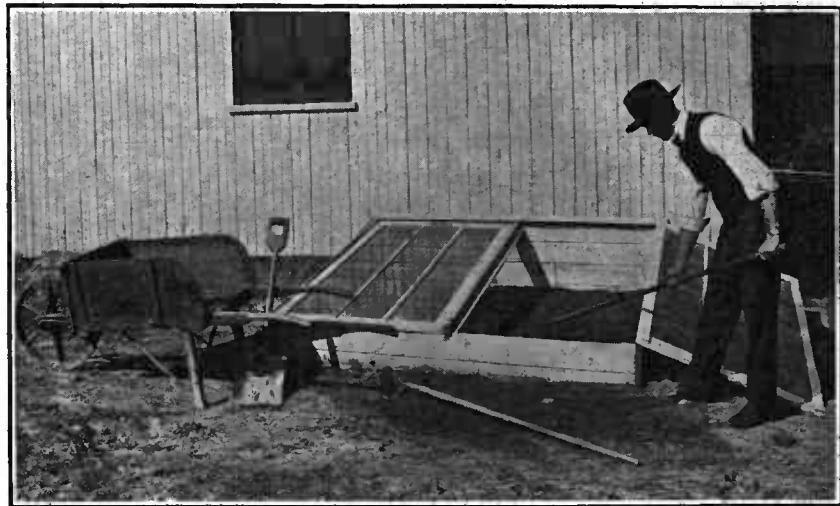


FIG. 8.—Preparation of a sash-covered frame for starting early plants.

PLANTING ZONES.

The accompanying planting tables, together with the frost-zone maps (figs. 9 and 10), are based upon records of the United States Weather Bureau covering a period of 20 years and are intended to serve as a guide for determining the earliest dates that the various garden crops may be planted in the spring; also the latest dates that it will be safe to plant certain crops and have them mature before the first killing frost in the autumn. It should be borne in mind that there is a difference of several days in the frost occurrence within each zone; this is due to differences in altitude and latitude, and also to the proximity of bodies of water and large tracts of timber.

EARLIEST PLANTING DATES.

Earliest safe dates for planting vegetables in the open in the zones shown in figure 9.

Crop.	Zone A.	Zone B.	Zone C.	Zone D.	Zone E.	Zone F.	Zone G.
Bean, Lima.....	Mar. 1 to 15.....	Mar. 15 to Apr. 1.....	Apr. 1 to 15.....	May 1 to 15.....	May 15 to June 1.....	May 15 to June 15.....	May 15 to June 15.....
(Snap.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to 30.....	Apr. 1 to May 1.....	May 1 to 15.....	May 15 to June 1.....	May 15 to June 1.....
Beet.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to 15.....	May 15 to June 1.....
Brussels sprouts.....	do.....	do.....	do.....	do.....	do.....	do.....	Do.....
Cabbage.....	Jan. 1 to Feb. 1.....	Jan. 15 to Feb. 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to May 15.....
Carrot.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to 15.....	May 1 to June 1.....
Cauliflower.....	do.....	do.....	do.....	do.....	do.....	do.....	Do.....
Celery.....	do.....	do.....	do.....	do.....	do.....	do.....	Do.....
Chard.....	do.....	do.....	do.....	do.....	do.....	do.....	Do.....
Collard.....	Jan. 1 to Feb. 1.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to June 1.....
Corn, sweet.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 1.....	Apr. 1 to May 1.....	Apr. 15 to May 15.....	May 1 to June 1.....	May 15 to June 15.....
Cucumber.....	Mar. 1 to 15.....	Mar. 15 to Apr. 1.....	Apr. 1 to 15.....	Apr. 15 to May 1.....	May 1 to June 1.....	May 15 to June 15.....	June 1 to 15.....
Eggplant.....	do.....	do.....	do.....	do.....	do.....	do.....	do.....
Kale.....	Jan. 1 to Feb. 1.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to 15.....
Kohl-rabi.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 1.....	Apr. 1 to May 1.....	May 1 to 15.....	May 15 to June 1.....
Lettuce, Head.....	do.....	do.....	do.....	do.....	do.....	do.....	Do.....
Leaf.....	Jan. 1 to Feb. 1.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to May 15.....
Melons.....	Mar. 1 to 15.....	Mar. 15 to Apr. 1.....	Apr. 1 to 15.....	Apr. 15 to May 1.....	May 1 to June 1.....	June 1 to 15.....	May 15 to June 1.....
Okra, or gumbo.....	Feb. 15 to Mar. 1.....	Mar. 1 to Mar. 15.....	Mar. 15 to 30.....	do.....	do.....	May 1 to 15.....	May 15 to June 1.....
Onion sets.....	Jan. 1 to Feb. 1.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 1 to May 1.....	May 1 to 15.....
Parsley.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 1.....	Apr. 1 to May 1.....	May 1 to 15.....	May 15 to June 1.....
Parsnip.....	do.....	do.....	do.....	do.....	do.....	do.....	Do.....
Peas, Smooth.....	Jan. 1 to Feb. 1.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to June 1.....
(Wrinkled.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 1.....	Apr. 1 to May 1.....	May 1 to 15.....	May 15 to June 1.....
Peppers.....	Mar. 1 to 15.....	Mar. 15 to Apr. 1.....	Apr. 1 to 15.....	Apr. 15 to May 1.....	May 1 to June 1.....	June 1 to 15.....	May 1 to June 1.....
Potatoes, Irish.....	Jan. 1 to Feb. 1.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to June 1.....
Sweet.....	Mar. 1 to 15.....	Mar. 15 to Apr. 1.....	Apr. 1 to 15.....	Apr. 15 to May 1.....	May 1 to June 1.....	June 1 to 15.....	May 1 to June 1.....
Pumpkin.....	do.....	do.....	do.....	do.....	do.....	do.....	do.....
Radish.....	Jan. 1 to Feb. 1.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to 15.....
Salsify.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to 15.....	May 15 to June 1.....
Spinach.....	do.....	do.....	do.....	do.....	do.....	do.....	Do.....
Squash.....	Mar. 1 to 15.....	Mar. 15 to Apr. 1.....	Apr. 1 to 15.....	Apr. 15 to May 1.....	May 1 to June 1.....	June 1 to 15.....	May 15 to June 15.....
Tomato.....	do.....	do.....	do.....	do.....	do.....	May 15 to June 15.....	June 1 to 15.....
Turnip.....	Jan. 1 to Feb. 1.....	Feb. 1 to 15.....	Feb. 15 to Mar. 1.....	Mar. 1 to 15.....	Mar. 15 to Apr. 15.....	Apr. 15 to May 1.....	May 1 to 15.....

Owing to the varied character of the Rocky Mountain and Pacific coast regions, it is not practicable to present the planting information in zone form, as there may be a very great difference in the dates of killing frosts in the same general locality, on account of elevation. Gardeners on the Pacific coast should be guided by the experience of competent persons in their own neighborhood. The coast region of Oregon and Washington is so influenced by ocean currents that a separate map would have to be designed to meet its requirements. Sufficient data upon which to base a map for this region are not at hand.

In zones A, B, C, and parts of zone D of the eastern United States, cabbage, turnips, spinach, kale, collards, and certain varieties of onions may be grown in the open ground throughout the winter. In certain parts of zone E spinach and kale may be grown all winter. In zone F such crops as sweet potatoes, melons, eggplants, and peppers should be planted only under the most favorable conditions, as the season is sometimes too short for their full development under adverse conditions.

LATEST PLANTING DATES.

Latest safe dates for planting vegetables for the fall garden in the zones¹ shown in figure 9.

Crop.	Zone C.	Zone D.	Zone E.	Zone F.	Zone G.
Bean:					
Pole Lima.....	Sept. 15	Aug. 1	July 15	July 1	.....
Snap.....	do.....	Sept. 1	Aug. 15	Aug. 1	July 15
Beef.....	do.....	do.....	do.....	do.....	do.....
Cabbage.....	Sept. 1	Aug. 15	July 15	July 1	June 15
Carrot.....	do.....	do.....	do.....	do.....	Do.
Cauliflower.....	do.....	do.....	do.....	do.....	Do.
Celery.....	Oct. 1	Sept. 1	Aug. 1	do.....	May 15
Chard, Swiss.....	Sept. 15	do.....	Aug. 15	Aug. 1	July 15
Corn, sweet.....	Aug. 15	Aug. 1	July 15	July 1	June 15
Cucumber.....	do.....	do.....	do.....	do.....	.....
Eggplant.....	July 15	July 1	June 15	June 1	.....
Kale.....	Nov. 1	Oct. 1	Sept. 15	Sept. 1	Aug. 15
Lettuce.....	do.....	Oct. 15	Oct. 1	Sept. 15	Sept. 1
Melons:					
Muskmelon.....	June 15	June 1	May 15	May 1	.....
Watermelon.....	July 1	July 1	June 15	.....	.....
Okra.....	July 15	do.....	do.....	June 1	.....
Onion sets.....	do.....	do.....	do.....	do.....	May 15
Parsley.....	Nov. 1	Oct. 1	Sept. 1	Aug. 1	July 1
Parsnip.....	.....	.....	May 15	May 1	Apr. 15
Pea.....	Nov. 1	Oct. 1	Sept. 1	Aug. 1	July 15
Peppers.....	July 15	July 1	June 15	June 1	.....
Potatoes:					
Irish.....	Aug. 15	Aug. 1	July 15	July 1	June 15
Sweet.....	do.....	July 15	June 15	May 1	.....
Radish.....	Oct. 15	Oct. 1	Sept. 15	Sept. 1	Aug. 15
Salsify.....	June 15	June 1	May 15	May 1	Apr. 15
Spinach.....	Oct. 15	Oct. 1	Sept. 1	Aug. 15	Aug. 1
Squash:					
Bush.....	Aug. 15	Aug. 1	July 15	July 1	June 15
Vine.....	July 15	July 1	June 15	June 1	.....
Tomato.....	Aug. 15	July 15	July 1	June 15	.....
Turnip.....	Oct. 15	Oct. 1	Sept. 1	Aug. 1	July 15

¹ Zones A and B are sections in which many vegetables are planted late in the fall to form the winter garden or early spring garden.

Garden plants are divided into about four more or less distinct groups.

Early cabbage plants, kale, onion sets, smooth peas, Irish potatoes, and radishes may be planted two weeks before the average date of the last killing frost.

Beets, Swiss chard, carrots, lettuce, wrinkled peas, cauliflower, spinach, and sweet corn may be planted about the date of the last killing frost.

Beans, parsnips, salsify, melons, cucumbers, tomato, and sweet-potato plants may be planted after the last killing frost.

The heat-loving plants, such as peppers, eggplants, Lima beans, and the squashes, should not be planted in the open until the ground

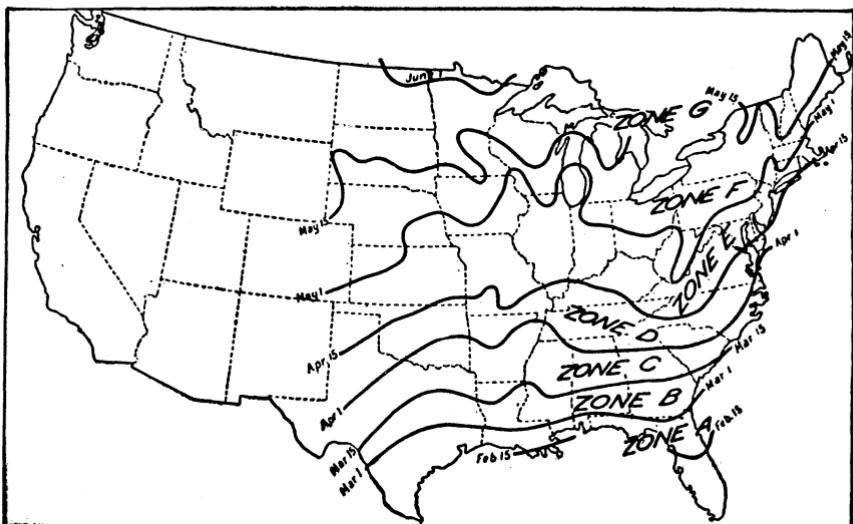


FIG. 9.—Outline map of the United States, showing zones based on the average date of the last killing frost in spring. The time of planting for the various vegetables is determined for every section by the dates given on this map.

has thoroughly warmed, which will be about four weeks after the last killing frost.

There are a number of crops, such as snap beans, lettuce, radishes, and beets, that should be planted at intervals in order to insure a continuous supply throughout the season. In the case of snap beans as many as five different plantings may be had in some sections. In the southern part of the United States special attention should be given to the planting of the semihardy crops, such as spinach, kale, and cabbage, during the autumn, in order to have a supply throughout the winter.

By following the table showing the latest safe dates for planting (see also fig. 10), the various crops will mature during average years; however, there may be seasons when the first killing frost in

the autumn occurs earlier than usual and some of the later plantings will be lost. The late planting of vegetables prolongs the season of usefulness and is worth a chance.

GENERAL CARE OF THE GARDEN.

A garden bears close acquaintance, and the successful gardener is the one who keeps in close contact with his crops throughout the entire growing season. A visit to the garden during the early morning while the dew hangs heavily upon every plant will reveal the happenings of the night. Perhaps some insect attack has started or some injury has occurred which requires immediate attention. A

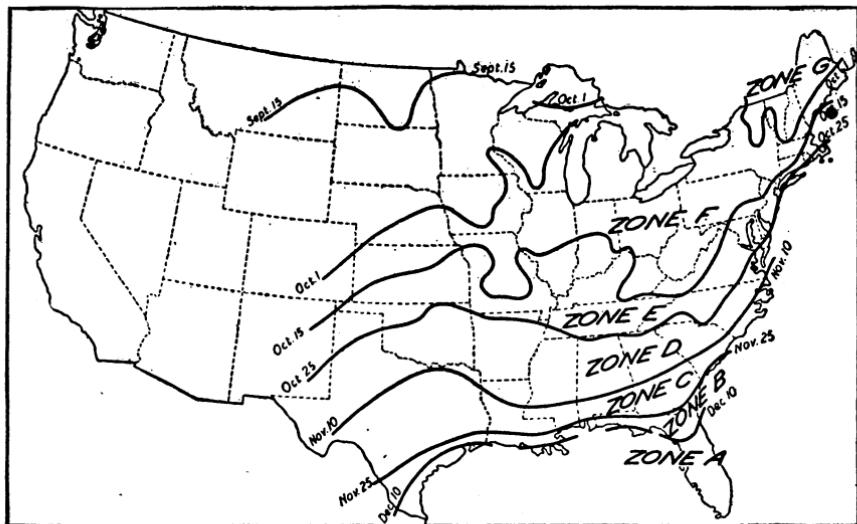


FIG. 10.—Outline map of the United States, showing zones based on the average date of the first killing frost in the autumn. The latest safe dates for planting vegetables in the autumn are determined by the dates given on this map.

garden requires a little attention almost every day and responds in direct proportion to the care bestowed upon it. The size of the garden should be such that its care will not prove a burden. A small garden intensively cultivated is much better than a larger one which is allowed to grow to weeds.

HOLDING MOISTURE.

The frequent stirring of the surface soil with a steel rake, especially during dry weather, will stimulate the growth of the crops and control weeds. The surface should also be stirred after a rain just as soon as the ground is dry enough to work. Most people have an idea that the stirring of the soil is primarily in order to kill weeds, but there is equal need of it where no weeds are present. The roots of

plants require air as well as moisture, and frequent stirring of the surface soil admits the air and at the same time conserves moisture. Shallow cultivation during dry weather forms what is known as a soil mulch, preventing the escape of moisture. Very often shallow cultivation during dry weather is more effective than irrigation.

WATERING.

Artificial watering, if properly applied, will prove a decided advantage during dry periods, but may prove an injury if not properly handled. Frequent light sprinkling of the garden is injurious. The proper method is to soak the soil thoroughly about once each week, preferably during the evening, and then loosen the surface by cultivation the following morning or as soon as the soil is dry enough to work. No more water should be applied until absolutely necessary; then another soaking should be given. On a small scale the water may be applied by means of a sprinkling can. Where available, a garden hose is effective, and overhead sprinkler systems are frequently employed to advantage. Perhaps the best method for applying the water is to open slight furrows alongside the rows of plants and allow the water to flow gently along these furrows.

After the water has all soaked into the soil the wet earth in the furrows should be covered with dry soil, to prevent baking. Where seeds are to be sown during a period of drought a slight furrow may be opened and filled with water; then, after the water has soaked into the soil, the seeds may be sown and covered with dry earth. This method will insure a good stand of plants, as the moisture feeds upward in the soil, like the oil in a lamp wick.

DISEASES AND INSECTS.

Garden crops are subject to attack by a number of insects and diseases. Preventive measures are best, but if an attack occurs and the city gardener is not familiar with the insect or disease and the proper treatment to protect his crops he is advised to consult the local garden leader or write immediately to the Extension Division of the State College of Agriculture. The United States Department of Agriculture has a bulletin (Farmers' Bulletin 856) which gives the necessary information on garden insects and diseases and can be procured free upon request.

In a number of cities the garden committees have arranged for sprayers and spray materials, and these are furnished to gardeners at actual cost. In a few instances power sprayers have been used, the work being done by city-park employees, the outfit being driven through the alleyways and the gardens reached by means of long leads of hose. In many cases the city-garden committees have provided a number of small compressed-air sprayers that can be car-

ried by means of a strap over the shoulder of the operator. These are lent to the gardeners, who are also supplied with the necessary spray materials at cost and given full instructions regarding their application.

Poisons may be applied in a powdered form to a number of the garden crops, including Irish potatoes, by means of a small burlap or cheesecloth bag, the poison being dusted upon the plants when they have dew upon them. This can be done in the morning before the plants have dried or late in the evening after the dew has begun to form.

CROPS FOR THE CITY HOME GARDEN.

As a rule not more than 10 or 12 different kinds of vegetables should be grown in the city home garden. These should be chosen from the standpoint of securing the greatest food value from a limited area. Certain of the very important food crops, such as Irish potatoes, peas, and sweet corn, require too much space for the small city garden, but should be included wherever the available space will permit.

Owing to the extreme variation of local conditions, no definite plan can be given for the city home garden, and each gardener will have to select the crops to be grown according to his soil, space, and the requirements of his family. By careful planning and by keeping every foot of garden space fully occupied a great quantity of produce can be secured from a comparatively small plat of ground. A succession of plantings of certain vegetables will produce a continuous supply, while others may be grown between the main crops, thus making the land do double duty. There is a tendency on the part of many persons to plant too heavily to lettuce and radishes. As a matter of fact a supply of these vegetables can be grown in the rows between the plants or hills of other crops. Most beginners attempt too many varieties and kinds of vegetables. They would do better to confine themselves to a few standard sorts, leaving the novelties to those who have plenty of land and time at their disposal.

It is assumed that the average space available for the city vegetable garden will not exceed 30 by 60 feet. Many gardens in back yards are smaller, while others located on vacant lots may include one-fourth acre or more. The size of the garden will determine largely the crops to be grown. The following cultural directions are based on average conditions and are subject to some modification to suit the locality.

BEANS.

The bean crop stands at the head of the list in importance for the city garden, especially from the standpoint of producing a large quantity of food quickly on a limited space. The food value of the

bean, in all forms, is also very high, and it may be grown under a wide range of conditions.

String beans, or snap beans in bush form, are the most popular for planting in the small garden. The seed should not be planted until the ground is fairly warm and the danger of frost safely passed. Stringless Green-Pod, Currie's Rustproof Wax, and Refugee Wax are the leading early varieties of bush beans. Where space is limited the bush varieties can be planted in rows 24 inches apart, with the individual plants 3 or 4 inches apart in the row, or in hills 12 inches apart with four plants in a hill. Three, or even four, plantings at intervals of three or four weeks should be made,



FIG. 11.—Lima beans growing on the outside of a garden fence.

in order to insure a continuous supply. In sections of the country where the first autumn frost does not occur until about the first of October a late or fall crop of snap beans can be grown to advantage, the seed being planted about the first week in August.

A half pint of seed of snap beans will plant about 100 feet of row with five seeds to a hill and the hills 12 inches apart. A hundred feet of row will be sufficient for one planting to supply the average family. If four plantings are made 1 quart of seed will be required.

Pole or climbing beans should be planted in every garden where space will permit. The variety known as Kentucky Wonder produces a plentiful supply that can be eaten pod and all while they are tender, as shelled beans when more mature, and as dry beans

after they ripen. Pole or climbing Lima beans are adapted to a wide range of territory and can often be grown on a division fence, on a trellis covering the kitchen porch, or on an outbuilding. Figure 11 shows a street fence which is being made to support a splendid crop of Lima beans. Bush Lima beans are more limited in their soil and climatic requirements, but are considered by many persons to be of finer quality than the pole varieties.

Lima beans require a richer soil than string or snap beans, and the seed should not be planted until the ground is quite warm, fully a week later than snap beans. All beans should be planted comparatively shallow, especially on clay or heavy soils. On light or sandy soils beans may be covered from $1\frac{1}{4}$ to 2 inches. Beans will not start well if planted in wet soil or if covered too deeply.

In case the soil should become packed by heavy rains before the plants appear it is a good plan to break the crust over the row by means of a steel rake, great care being taken that the rake teeth do not go deep enough to injure the sprouting beans. Beans should be cultivated and hoed at least once a week, but they should not be worked when their leaves are wet with dew or rain, as this has a tendency to cause them to rust. In case more beans are grown than are required for summer use, the young tender pods may be canned for winter. Any beans that become too old for immediate use should be allowed to ripen and be saved for planting the next season or for cooking as dry beans. Colored dry beans are as good as white, both in flavor and nutritive value, in spite of a rather general popular belief to the contrary, and none of them should be wasted.

ROOT CROPS.

The root crops, including beets, carrots, parsnips, salsify, turnips, and radishes, form a group of very important food crops for the small garden. The soil requirements and general culture are very much the same for all the root crops, and for that reason they are considered collectively. The soil for root crops should be quite rich, and it should also be spaded or plowed deep and made fine and mellow the full depth that is broken. These root crops will all withstand slight frosts and may be planted very early in the spring. Root crops are especially desirable for the small garden on account of the fact that the rows may be as close together as 12 or 14 inches and the plants 3 or 4 inches apart in the row, making it possible to grow a large quantity of food on a small area.

Beets.

An ounce of beet seed will be sufficient for the ordinary city garden. Beets may be planted almost as soon as the ground can be worked in the spring. Make the soil fine and mellow; then lay off the row

about 1 inch deep, using the hoe handle to make the little furrow. What are commonly called beet seeds are really seed balls, each containing two or three seeds, and for that reason too many should not be put in. Eight or ten to the foot of row are sufficient. Cover the seeds about 1 inch and rake the surface smooth over the row. If the seeds are good and the weather favorable the plants should appear in about 10 days after planting. They should be thinned to about 3 inches in the row, but if not too thick to start with they may be allowed to reach a height of about 3 or 4 inches before thinning, and the thinnings may be used for beet greens. Any skips or spaces can be filled in by transplanting plants that are removed from other parts of the row. A row 50 feet long will furnish enough early beets to supply the ordinary family. A second planting may be made about four weeks after the first. A late planting should be made about six or eight weeks before the first autumn frosts. Any beets that are left in the garden at the end of the season should be stored for winter use.

Crosby's Egyptian and Blood Turnip are considered among the best varieties for the home garden.

Carrots.

One-fourth ounce of carrot seed will be more than enough to plant 50 feet of row early in the spring and to make another similar planting later for fall use and storage. Plant the seeds rather thickly, 20 or 30 to the foot, and cover them with about half an inch of light soil, but not more than one-fourth of an inch in heavy soil. Thin to 2 or $2\frac{1}{2}$ inches in the row as soon as they are large enough to handle. If desired, the plants may be left a little closer, then thinned a second time when the first of the young carrots are about half an inch in diameter. The young carrots that are thinned out may be used on the table as creamed baby carrots and are very fine. Late-planted carrots may remain in the ground until after the first frosts of autumn and then dug, topped, and stored for winter use.

Oxheart and Danvers Half-Long are leading varieties.

Parsnips.

A 10-cent packet, or about one-eighth of an ounce, of parsnip seed will be sufficient to plant for the ordinary family. Be sure that the seed is fresh, as it loses its vitality if kept over until the second year. Plant the same as carrots, and thin to 3 or 4 inches in the row. Parsnips require a deeply prepared and a very rich soil for their best development.

Parsnips may remain in the ground where grown during the winter or until wanted. It may be best, however, to dig part of the roots late in the fall before the ground freezes and store them for winter use.

In the North parsnips are planted quite early and given the entire season to develop and are used mainly during the winter and spring. In the South they may be planted quite early and used as a spring vegetable; then another planting is made for a fall crop. The later planting is usually made in August or September, when the late summer rains occur.

Hollow Crown and Guernsey are among the best varieties.

Salsify, or Vegetable Oyster.

Salsify requires practically the same cultural treatment as parsnips. It is not grown extensively in the home gardens of the Southern States, but is primarily a northern crop. Salsify may remain in the ground during the winter, or a part may be dug late in the fall and stored in a bed or box of moist sand for winter use.

The Sandwich Island is the leading variety.

Turnips.

Throughout the Northern States turnips are planted as a late-season crop, the seed being sown from July 10 to 25 and the crop harvested after the first heavy frosts. In the Southern States turnips are planted in the spring, just as soon as the ground can be worked, and the crop is used before the hot weather of summer comes on. A late crop is frequently planted in September, the roots being cooked in the usual manner, while the young tender tops are boiled as greens.

For the small garden, turnips had best be planted in drills, with the rows about 12 inches apart, and the plants should be thinned to 2 or $2\frac{1}{2}$ inches in the row. The seed should be scattered very thinly in the drill and covered very lightly. The plants removed in thinning may be used as greens. Turnips will withstand some frost, but their keeping qualities are injured if allowed to freeze before pulling. If they become frozen in the storage pit they should not be disturbed until the weather warms and the frost gradually draws out of them. For best results turnips should not actually freeze at any time.

The Purple-Top Strap-Leaved is a leading variety.

Radishes.

Radishes are mentioned last in the list of root crops because they have the least real food value of any. Everybody wants a few early radishes in the garden, because they come to maturity quickly and furnish something green and succulent for the table. From 10 to 20 feet of row will produce all the radishes required by a family. The seeds should be sown in a little furrow or drill, about 12 or 15 seeds to the foot, and covered 1 inch. Radishes may also be sown thinly in the drill with beets, carrots, or parsnips, as they come quickly and break the surface for the other seedlings. The radishes

should be pulled before they are large enough to injure the regular crop.

The Scarlet Globe White-Tipped, French Breakfast, Icicle, Philadelphia White Box, and Early Yellow Turnip are among the leading varieties.

Where it is desirable to have radishes for a considerable period of time, two, or even three, plantings at intervals of two weeks should be made, or the same result may be attained by the proper selection of varieties. There are also two or three varieties of winter radishes that may be grown for winter use.

TOMATOES.

Tomatoes are among the most universally used products of our home gardens, and there should be a few plants, no matter how small the garden. In order to have tomatoes early, the seed must be sown in the house or hotbed or the plants purchased from some plant grower who has the facilities for starting them early. Bonnie Best, Early Jewel, Acme, Globe, and Detroit are among the leading early sorts, while Improved Stone and Trophy are standard late varieties. Two small packets of seed, one of an early and one of a late variety, will produce enough plants for several family gardens, and it may be possible for one person to start the plants for an entire neighborhood. If a window box is used for starting early plants of various kinds, a portion of the space in this box should be used for the tomato plants. Where a window box is not in use a cigar box filled with loose soil will serve as a seed bed, but the plants will have to be transplanted and given about 3 inches of space both ways as soon as they form one or two true leaves in addition to their two small seed leaves. Tomato seed comes up in about five or six days, and the seedlings will ordinarily be ready for transplanting in two weeks after the seed is sown. About six weeks will be required for growing the plants from the time of sowing the seed until they are ready for setting in the garden.

A tray of fine, rich soil about 3 inches deep placed in a south window of a living room makes a good transplanting bed. The plants can be grown in quart berry boxes, in 3-inch flowerpots, in tin cans with a few holes punched in their bottoms, or in paper bands. The essentials are to keep the plants growing rapidly from the start and to retain all the dirt attached to their roots when setting them in the garden.

The best method of growing tomatoes in the city home garden is by pruning the plants to a single stem, or at most to two stems, and tying them to stakes or a trellis, as shown in figure 12. By this method the plants can be set as close as 2 feet apart in each direction.

When tied to stakes the plants are easy to cultivate. The fruit is clean because it is kept off the ground, and the tomatoes ripen earlier than when the plants are not pruned or tied to stakes. Any stakes that are about $1\frac{1}{2}$ inches in diameter and 4 to 5 feet long will answer. Frequently the plants are trained to horizontal wires stretched on small posts or to a trellis made of laths.

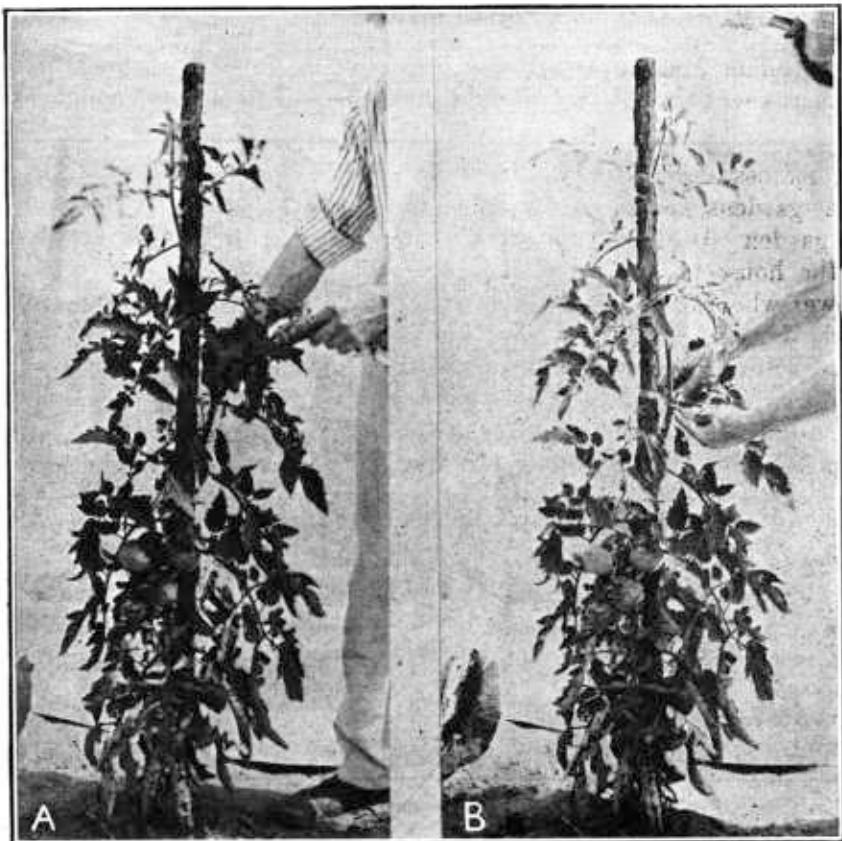


FIG. 12.—Training tomatoes to stakes : A, Cutting out the side shoots or branches ; B, tying the main stem to the supporting stake.

The tomato plants are pruned by pinching out the side shoots (fig. 12) as they appear in the axis of the leaf, that is, where it joins the main stem. The fruit clusters appear on the opposite side of the stem where there is no leaf. The plants are tied to the stakes or other support by means of soft twine or with small strips of old cotton goods. (Fig. 13.) Seedsmen have on sale a jute string which is especially made for tying tomatoes. Loop the string around the stake so that it will not slip downward on the stake and then tie loosely below a leaf node in such a manner that the stem will be

supported without the string binding it and injuring its growth. Four to seven fruit clusters will be formed on each plant, and if the plants are well cultivated and cared for they will continue to bear fruit throughout the season in the northern parts of the country. In the South, where the heat of midsummer kills tomato plants, a late crop may be planted for fall use.

SWEET PEPPERS.

Sweet or Mango peppers are increasing in favor with home gardeners everywhere. Six or eight good plants will supply enough for



FIG. 13.—Tomatoes trained to stakes in a back-yard garden.

an ordinary family. In the North, where the growing season is short, the plants must be started indoors and should be transplanted twice, so as to be quite large by the time the weather is warm enough to set them in the garden. Pepper plants will not withstand any frost, and they should not be set out until all danger is past. In the South the seed should be sown in the house or in a hotbed and may be transplanted directly from the seed bed to the garden, although better plants will be obtained if they are transplanted first from the seed bed to other boxes or to the hotbed and later to the garden. The plants should be handled in the same manner as tomatoes, but pepper plants are even more delicate.

The Ruby King and Chinese Giant are standard varieties of the large sweet peppers. Pimento peppers are becoming very popular throughout the Southern States; however, they will not mature where the frost-free growing season is less than $4\frac{1}{2}$ months and are not profitable unless they have at least 5 months of warm weather for their development. The pimento is adapted to the South, where the summers are long, with plenty of hot weather. The green pimento peppers have a thick flesh and a pleasant flavor and may be used like any sweet pepper. When red ripe the pimentos are canned for winter salads and for mixing with cheese to make pimento cheese.

EGGPLANT.

The seeds of eggplant should be sown indoors at the same time that early tomatoes and peppers are planted. The small plants should be transplanted to pots or paper bands and kept in the house until the weather is quite warm. The plants require a rich, deep soil, with plenty of fertilizer. They should be set about $2\frac{1}{2}$ feet apart each way. Six to ten plants will be sufficient to supply the average family.

OKRA, OR GUMBO.

Okra is sown in the open after danger of frost is over and the soil becomes quite warm, but in the North a few plants for the home garden may be started indoors, like tomatoes or peppers. Sow the seed a few inches apart in the row and thin the plants to 18 inches to 2 feet apart. Okra is very prolific, and 8 or 10 feet of row will supply the needs of an average family. Give frequent shallow cultivation until the plants are nearly grown.

The pods are the part of the plant used for food and should be gathered while still crisp and tender. If the pods are removed so as to allow none to ripen, the plants will continue to bear until killed by frost.

The White Velvet, Dwarf Green Prolific, Perkins Mammoth, Long-Podded, and Lady Finger varieties are recommended.

ONIONS.

The usual method of growing onions in the home garden is to plant a quart or two of sets just as early in the spring as the ground can be worked. Throughout the South the sets may be planted in the autumn and the surface of the ground mulched with fine straw or light manure over the winter. Onions may also be grown from seed, sown in the early autumn in the South and early spring in the North, but as a rule it is more satisfactory to secure a few sets for planting.

Onions require a light, mellow, rich soil. If planted in rows the sets (fig. 14) should be placed by hand, root end downward, about

4 inches apart in the row and covered to a depth of 1 inch. If planted in a bed they should be spaced 4 to 6 inches apart in each direction. As a rule, onion sets are not sold under variety names, but are classed as white, brown, or red.

The Yellow Globe, Yellow Danvers, Red Wethersfield, and Silver-skin are among the leading varieties that are planted from seed. The Crystal Wax and Red Bermuda varieties of the Bermuda type are often grown in the Southern States.

Where wanted for green onions, the sets may be planted as a filler in the rows with early tomatoes, but where mature onions are



FIG. 14.—Planting onion sets; every bulb is placed with the root end downward at a uniform depth and in straight rows.

desired it is best to plant them alone. Fully grown onions should not be pulled until the tops have broken over and partially ripened. The bulbs should then be pulled and spread in a cool, dry place (fig. 15) where they will get plenty of air. The mature onions should be kept where it is quite cool and dry. Slight freezing will not hurt the stored onions if they are not disturbed while frozen.

CABBAGE GROUP.

The cabbage group of garden plants includes both the early and the late types of cabbage, cauliflower, kale, collards, and Brussels sprouts. The general cultivation of each member of this group is

practically the same. They are natives of low-lying seacoast regions and require deep, moist, and rather rich soil for their best development. The various members of the cabbage group, however, may be grown in almost any locality; in fact, cabbage is one of the most universally grown of our garden crops. The important consideration is to have plenty of plant food in the soil so that they will make a quick, tender growth.

Early Cabbage.

Only a few heads of early cabbage should be grown in a small city garden. The plants should be started indoors, but may be set in the garden quite early if hardened off a little before setting them.



FIG. 15.—Onions spread out to dry in the shade of a tree.

In certain sections of the South, especially near the seacoast, the early varieties of cabbage may be started in October, planted out in November, and matured in April or May of the following spring. The Jersey Wakefield and Charleston Wakefield are the leading early varieties. They may be set in rows 24 to 30 inches apart and 15 inches apart in the row.

Late Cabbage.

Late cabbage can be planted between the rows of early potatoes or after snap beans, so that double service may be obtained from the soil. Late cabbage may be planted July 1 in some sections of the North and will form solid heads before the weather becomes cold enough to injure the crop. The Late Flat Dutch, Danish Baldhead,

and Copenhagen are among the best late varieties. They should be planted in rows 36 inches apart and 18 inches apart in the row. Cabbage may be stored in a cool, dry, well-ventilated cellar or buried in an outdoor pit in the garden.

Cauliflower.

Cauliflower is much more difficult to grow than cabbage and is only adapted to certain soil and climatic conditions which are to be found near the seacoast and limited inland areas. The important consideration in growing a spring crop of cauliflower is to have it so early that the heads will be formed before the extremely hot weather begins. The methods of starting the plants and general culture are the same as for early cabbage. When the heads begin to form, the leaves should be brought together above the heads and fastened by means of a string, so as to shut out the sunlight and retain the snowy whiteness of the heads. A fall crop of cauliflower can be grown in the same manner as late cabbage. Cauliflower can not be stored to advantage, but must be used within a few days after it is gathered.

Kale.

Kale can be grown either as a spring or fall crop, and in sections where the temperature does not go below zero during the winter it can be planted in the fall and will be ready for use during March and April. The market gardeners around Norfolk, Va., grow great fields of winter kale, planting the seed in September and cutting the crop at any time during the winter when the ground is free from snow and ice. About 50 or 60 feet of row in the home garden may be planted during the late summer for fall and early winter use. Kale is not stored, but is left growing until wanted for use.

Collards.

No southern garden would be quite complete without a small plat of collards for late-fall and early-winter use. Collards are a hardy form of cabbage which forms a loose head or cluster of very tender leaves that are used in much the same manner as cabbage. Throughout the South collards are planted during the latter part of the summer and the plants are left standing where grown, like late cabbage, and are quite hardy; in fact, it is claimed that the flavor is greatly improved by a slight freezing of the heads. Collards are not recommended for planting in the Northern States. A small packet of seed is all that is necessary to start the plants required in a family garden.

Brussels Sprouts.

Brussels sprouts are a kind of cabbage that forms a large number of buttons or small heads along its stem where the leaves are

attached. The culture of Brussels sprouts is the same as that of cabbage except that the leaves are removed from the lower part of the stem to give the buttons more room to develop.

Kohl-Rabi.

Kohl-rabi is a near relative of cabbage. It forms an enlargement of the stem just above the surface of the ground. This portion is used in the same way as turnips.

SALAD PLANTS.

As a general rule, the American people do not eat enough green vegetables, commonly referred to as salads. Crops of this class are especially adapted to the small garden, as they occupy very little space and will withstand more or less shading. The salad plants require a deep, rich soil with plenty of moisture. They also thrive under comparatively cool conditions.

Swiss Chard.

Swiss chard resembles the common garden beet in appearance, but it does not form an edible root, like the beet, and is grown for its large leaf stems, which are boiled for greens. Americans do not as a rule eat enough greens, and there is need to encourage the planting in the home garden of Swiss chard and other crops that may be used for this purpose. Beet tops while young and tender make good greens, but the leaf stems of Swiss chard have a very excellent flavor and remain tender a long time. As the outer leaf stems are removed the plants keep on forming new leaves in the center, so that a continuous supply is provided.

Swiss chard is planted and cultivated the same as garden beets. One-half ounce of seed will be sufficient for the ordinary family of five persons. The variety known as Lucullus is considered best. Plant in the early spring the same as beets, and thin the plants to about 6 inches in the row.

Spinach.

Spinach is another crop that is highly desirable for use as greens. Spinach thrives in cool weather and should be grown both as a spring and as a fall crop. In the extreme northern part of the country only one crop may be grown. In sections where the winters are mild the seed can be planted in the fall and the plants can remain in the ground all winter. For a spring crop, plant in the open ground as soon as the soil can be worked. The rows may be as close as 7 inches, and 12 to 15 seeds should be sown to a foot of row, the plants being thinned so that they will have 1½ to 2 inches of space for their development.

Spinach requires a very rich soil in order to make it grow quickly. A bed 5 feet wide and 30 feet in length and having about eight rows

running the length of the bed will furnish enough spinach for the ordinary family. The entire spinach plant is removed by cutting just above the surface of the ground. From 2 to 3 ounces of seed will be sufficient for a bed 5 by 30 feet in size. Spinach contains large quantities of iron and is especially desirable as a part of the diet in the early spring.

Celery.

There is nothing particularly difficult about growing celery after the plants are started. The celery seed bed requires very careful watering until the plants are up and large enough to transplant. As a rule, it will be best for city gardeners to purchase plants that are ready for setting in the garden. Celery requires a rich soil and plenty of moisture.

Anyone desiring to grow it should write to the United States Department of Agriculture for a copy of the Farmers' Bulletin on celery (No. 282), which gives full directions for growing the crop.

The White Plume, Golden Self-Blanching, and Boston Market are among the best varieties for the home garden.

Lettuce.

No early garden would be complete without at least a bed of lettuce; however, only a small space is necessary to grow plenty for the average family. In the old-fashioned garden a small bed was spaded in one corner and the seed sown broadcast and raked into the soil just as soon as the ground was dry enough to work in the spring. As the plants grew and began to crowd each other, they were thinned and those that were pulled out were used on the table. Later, when the plants became larger, they were cut off just above the ground.

Lettuce requires very rich soil and plenty of moisture, and will not withstand continued hot weather. It can be grown in partial shade and is one of the few crops that can be planted in back-yard gardens that are shaded a portion of the time. A 5-cent packet of seed will produce all the plants required for the small garden. A good method is to sow the seed in a box in the house and transplant the small plants to a bed or to rows in the garden. Lettuce is not injured by a light frost, especially if the plants have been grown in the open. The seed or plants may be planted between other crops that require a longer period for their development than the lettuce. Two plantings should be made in the spring and one in the late summer, in order to have a supply for a considerable period.

Grand Rapids is the leading variety of loose-leaf lettuce, while the Big Boston, Iceberg, and California Cream Butter are good heading sorts.

VEGETABLES THAT REQUIRE CONSIDERABLE SPACE IN THE GARDEN.

There are a number of garden vegetables that require too much space for growing in the small home garden. Wherever plenty of land is available these vegetables should be grown. Among those included in this group are Irish potatoes, sweet potatoes, peas, sweet corn, squashes, cantaloupes, and watermelons.

Irish Potatoes.

Irish potatoes are among the first crops that can be planted in a home garden. They have no place in a small garden, but where a space as great as 30 by 60 feet is available they should be included. A peck of seed potatoes, properly cut, will plant 300 feet of row and should yield 4 to 5 bushels. The usual method is to cut the seed, two eyes to each piece, dividing the fleshy part of the potato as equally as possible. The seed should not be cut until the ground is all ready to receive it. Great care should be taken to get seed that is free from scab or other diseases.

Irish potatoes can be planted in the North just as soon as the frost is all out of the ground and the soil dry enough to work. In the South the planting date will be governed by the season and the time that the young plants will be safe from spring freezes. It generally takes three to five weeks after planting in the Southern States for the potatoes to come up. In the North they will appear in a shorter period if weather conditions are favorable.

Peas.

Peas, often called English peas, require considerable space and should not be planted in a small garden. In order to be of real value at least 15 feet of row should be planted for each person in the family. Peas are the first crop that can be planted in the spring. In the North, this planting can be made just as soon as the ground can be worked, and two, or even three, plantings should be made in order to have a continuous supply. In the South, peas are planted about the same time as early Irish potatoes or a little earlier.

Peas require a rather rich soil with a little fertilizer added, as they make a quick growth. One pint of seed will plant 75 to 85 feet of row, and this should yield plenty of peas for five persons at each of four or five pickings. First, spade and rake the ground until it is fine and mellow; then open a furrow 3 to 4 inches deep with the corner of a hoe. Scatter the seeds broadcast in the bottom of the furrow or space them at the rate of 12 to 15 peas to a foot and cover them 3 to 4 inches deep. In heavy soils the seeds should not be covered so deeply as in light or sandy soils. If the ground is cold the seeds may be 10 days or two weeks in coming up, and if there should

be a heavy rain meantime the crust forming on the surface of the soil should be carefully broken over the rows with a steel rake.

Extra Early Alaska, Gradus, and Thomas Laxton are among the leading early sorts. The Champion of England and Telephone are considered good medium and late varieties.

The extra-early sorts may be planted with the rows as close as 24 inches apart where hand cultivation is practiced. The later and larger growing varieties require a space of about 3 feet between the rows. There should not be more than 10 days or two weeks' difference between the planting dates of early and of late varieties of peas, as the late ones mature more slowly than the early sorts.

Several of the early varieties of peas can be grown without supports, but they do better if given something to climb on. The late

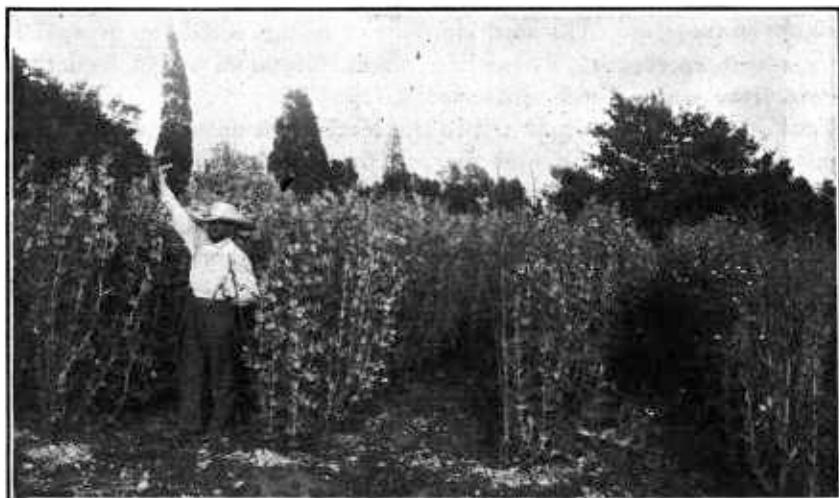


FIG. 16.—Tall-growing peas of the Telephone type, supported on brush.

varieties for the most part make a strong growth and require supports. Brush, where it may be had, woven-wire netting, a wire fence, or strings on stakes make satisfactory supports for peas. (Fig. 16.) The supports should be in place when the peas come up, in order that the plants may climb them from the first. Early spring peas occupy the land a comparatively short time and may be followed by late cabbage, beets, turnips, kale, spinach, or some other crop. A planting of peas made late in the summer will often give a fine fall crop that is ready for use just before frost in the autumn.

Sweet Corn.

Sweet corn requires plenty of space in order to produce enough ears to supply an average family and for that reason finds its proper place in large city and suburban gardens. The rows should be spaced

at least 3 feet apart, and the individual plants should stand 15 to 18 inches apart in the rows. If the corn is planted in hills containing three stalks each the hills must be at least $2\frac{1}{2}$ feet apart in the row for the early dwarf-growing varieties and 3 feet apart for the later or larger growing sorts. Corn requires a rich soil and should not be planted until the ground has warmed considerably. A pint of seed will plant 400 to 500 feet of row in either drills or in hills. Cover the seed $1\frac{1}{2}$ to 2 inches deep and thin to three stalks in a hill or to single stalks 15 or 18 inches apart in drills. If a large number of offshoots or suckers appear at the base of the plants at the ground, these should be removed, as they draw the strength of the plant. None but those shoots that appear very near the ground should be removed, as some of the varieties have their ears quite low on the stalks and the young ear looks very much like a sucker until the silk appears.

The Golden Bantam is the leading early variety. The Country Gentleman, Stowell's Evergreen, Mammoth Evergreen, and Ohio Sugar are among the leading medium and late varieties. For a continuous supply, plant Golden Bantam as early as possible, then follow in a few days with a planting of Country Gentleman. Two weeks later plant Stowell's Evergreen, and follow with additional plantings of some good late variety every three weeks until mid-summer.

Sweet Potatoes.

For an early crop, sweet-potato plants are started in a hotbed or greenhouse, and they must not be set in the open until all danger of frost is past and the ground is well warmed up. They usually thrive best when planted on wide ridges some 4 to $4\frac{1}{2}$ feet part and 12 to 15 inches apart in the row. Any good garden fertilizer will answer for this crop, and it is best applied either in small trenches or to the surface of the ground before the ridges are thrown up. Frequent shallow cultivation should be given until the vines begin to run. The Porto Rico, Nancy Hall, and Southern Queen varieties are recommended, and the Big-Stem Jersey where a dry-fleshed potato is desired.

VINE GROUP.

The vine group includes cucumbers, summer and winter squashes, cantaloupes, and watermelons. Owing to the space required by these crops they are not adapted to planting in a small garden. For the convenience of those who desire to grow them, brief cultural directions are given.

Practically all of the vine crops can be trained to a wire fence or trellis or on wire netting. By this method they can be planted along a fence or beside a building where there is good sunlight and the

vines can be trained up out of the way of other crops. In case cantaloupes or squashes are grown on a trellis, it will be necessary to support the fruits by means of bagging or cloth slings.

All of the vine crops require plenty of fertility in the soil. In addition to a shovelful of manure and a handful of fertilizer in each hill, a small quantity of commercial fertilizer may be worked into the soil around each hill after the vines begin to spread over the ground. The fertilizer should not be placed closer than a foot from the base of the plants and should be scattered over a considerable area. The results to be obtained in a small garden from growing any of the vine crops except summer squashes and cucumbers are extremely doubtful, and beginners are advised to devote the space to crops producing more food on a small area.

Cucumbers.

One or two hills will produce enough cucumbers for the average family. Each hill should be given about 50 square feet of space, or 7 feet in each direction. The hills should be made several days before planting, with a shovelful of manure mixed thoroughly with the soil of each hill. About a dozen seeds should be scattered in each hill and covered to a depth of about an inch. Later, the plants should be thinned to three to five in a hill.

Cucumbers are very tender and should not be planted until all danger of frost is past. The plants may be started indoors by planting the seeds in pots, paper bands, or quart berry boxes filled with soil; then set in the garden when the weather is warm. The young cucumber plants are frequently destroyed by a small beetle. The easiest way to protect the plants is by covering each hill with a small wooden box the bottom of which has been removed and a piece of fine mosquito or fly netting tacked on. After the plants become toughened, the beetles are not likely to trouble them.

White Spine is the most common variety.

Cantaloupes.

Cantaloupes, sometimes referred to as muskmelons, are grown in exactly the same way as cucumbers.

The Rocky Ford, Tiptop, Hoodoo, and Ohio Sugar are among the leading varieties.

Watermelons.

Watermelons require too much space for planting in a small garden. The cultivation of watermelons is practically the same as that of squashes.

The Kleckley Sweets and Florida Favorite are among the best small watermelons for home growing. The variety known as Tom Watson is the one most frequently sold on our markets.

Squashes.

Two varieties of summer squashes are suited for growing in city gardens. These are the Summer Crookneck and Pattypan. The summer squashes are of bush habit of growth and do not require much space. Three to five hills of either of the kinds mentioned will supply the ordinary family. The hills should be 4 to 5 feet apart. Plant 8 or 10 seeds to a hill, covering them to a depth of an inch, and when the plants are well established thin them to three in a hill.

The Hubbard Squash and Boston Marrow form true vines and require more space than the summer bush varieties. The fruits of the summer varieties are used while they are young and tender, but those of the fall and winter varieties are allowed to get fully ripe before being gathered and stored. Four or five hills will be sufficient, and a space of 10 or 12 feet should be allowed between the hills.

The vine or running squashes may be grown in a corner of the garden or on a trellis. In one instance an old peach tree formed a support for a large squash vine and the fruits were held up by slings consisting of strips of bagging.

PUBLICATIONS OF THE UNITED STATES DEPARTMENT OF AGRICULTURE RELATING TO THE SUBJECT OF THIS BULLETIN.

AVAILABLE FOR FREE DISTRIBUTION BY THE DEPARTMENT.

- The School Garden. (Farmers' Bulletin 218.)
Culture and Uses of Okra. (Farmers' Bulletin 232.)
Cucumbers. (Farmers' Bulletin 254.)
Beans. (Farmers' Bulletin 289.)
Sweet Potatoes. (Farmers' Bulletin 324.)
Onion Culture. (Farmers' Bulletin 354.)
The Home Production of Onion Seeds and Sets. (Farmers' Bulletin 434.)
Frames as a Factor in Truck Growing. (Farmers' Bulletin 460.)
Tomato Growing in the South. (Farmers' Bulletin 642.)
The Squash-Vine Borer. (Farmers' Bulletin 668.)
Sweet-Potato Diseases. (Farmers' Bulletin 714.)
The Common Cabbage Worm. (Farmers' Bulletin 766.)
Asparagus. (Farmers' Bulletin 829.)
Control of Diseases and Insect Enemies of the Home Vegetable Garden.
(Farmers' Bulletin 856.)
How to Increase the Potato Crop by Spraying. (Farmers' Bulletin 868.)
Home Storage of Vegetables. (Farmers' Bulletin 879.)
Saving Vegetable Seed for the Home and Market Garden. (Farmers' Bulletin
884.)
Bean Growing in Eastern Washington and Oregon and Northern Idaho.
(Farmers' Bulletin 907.)
Cabbage Diseases. (Farmers' Bulletin 925.)
Home Gardening in the South. (Farmers' Bulletin 934.)
The Farm Garden in the North. (Farmers' Bulletin 937.)

**FOR SALE BY THE SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING
OFFICE, WASHINGTON, D. C.**

- Celery. (Farmers' Bulletin 282.) Price 5 cents.
Lessons for American Potato Growers from German Experiences. (Department
Bulletin 47.) Price 5 cents.
Potato Wilt, Leaf-Roll, and Related Diseases. (Department Bulletin 64.)
Price 15 cents.
Five Oriental Species of Beans. (Department Bulletin 119.) Price 10 cents.
The Eggplant Lace-Bug. (Department Bulletin 239.) Price 10 cents.
Lessons on Tomatoes for Rural Schools. (Department Bulletin 392.) Price
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Systems of Renting Truck Farms in Southwestern New Jersey. (Department
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